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(54) Key distribution for mobile network

(57) A satellite mobile telecommunications system includes mobile terminals 2a, 2b which can communicate with one another using end-to-end encryption and decryption techniques. When secure end-to-end communication is required, each terminal uses a common encryption code (RAND) to encode data and decode data transmitted between the terminals. The encryption code is transmitted in a secure manner from a remote database station (15) to the terminals. Each terminal stores a terminal key ( $K_a$ ,  $K_b$ ) on its SIM card and the keys are also held in the remote station (15). Partial keys ( $K_{pa}$ ,  $K_b$ ) comprising the pseudo random number (RAND) and the keys  $K_a$ ,  $K_b$  stored at the station (15)

are produced at the station (15) by an exclusive OR process in order to mask the keys and the random number. The partial key  $K_{pa} = K_a + (\text{RAND})$  is sent to terminal 2a. At the terminal 2a, the partial key  $K_{pa}$  is exclusive OR-ed with the locally stored terminal key  $K_a$  on the SIM card, so as to recover (RAND). The common code (RAND) is determined by the same process at terminal 2b, from  $K_{pb} = K_b + (\text{RAND})$  and the locally stored key  $K_b$ . The terminals then both run a GSM encryption algorithm (A5) to encrypt and decrypt transmitted data, on the basis of the common code (RAND).

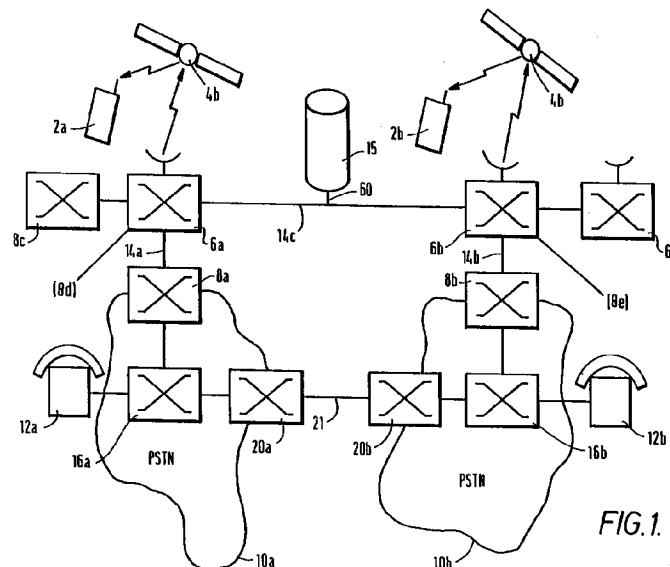


FIG. 1.























































